# SEMPARIS – Séminaires en région parisienne

http ://string.lpthe.jussieu.fr/semparis/

## Cours

**Vendredi 6 Juillet 2018, 10 :00**
IPHT, Salle Claude Itzykson, Bât. 774( https ://courses.ipht.cnrs.fr/ ?q=fr/node/198 )
Domaines : astro-ph—hep-ph

Titre : *Dark matter phenomenology (4/5)*

Orateur : **Marco Cirelli ( LPTHE Paris )**

Résumé : *Dark matter constitutes about 26% of the present matter-energy content of the Universe (84% of the matter-only content) and is one of the fundamental ingredients that shape the evolution of galaxies and the Universe. Surprisingly enough, the nature of dark matter is still unknown, and unveiling this mystery stands out as one of the most pressing issues in cosmology and particle physics.*

*The course will present a basic overview of the state of the art in dark matter physics, mostly focussing on the phenomenology rather than on the many models proposed by particle theorists to explain it.*

*Plan of the lectures :*
*1) Introduction, proofs of existence, and basic properties. Possible alternatives to particle dark matter and their status.*
*2) Mechanisms of production in the early Universe : thermal freeze-out (in particular), freeze-in, asymmetric dark matter...*
*3) Direct detection via nuclear recoils.*
*4) Indirect detection with cosmic rays : charged particles, gamma rays (prompt and secondary), neutrinos.*
*5) Collider searches (and possible complementarity of the searches).*